myself, I determined to examine personally the condition of the fossa ovalis, and the result of 40 cases taken promiscuously, (using a small probe so as to detect the slightest imperfection,) was as follows: in 3 was a *very small* valvular opening in the auricular septum, in 2 a small valvular opening, and in 1 a deficiency in the membrane closing up the foramen in three places, all more or less valvular, the largest one-sixth of an inch long, oblique, in all 6-40ths, *one* only very obvious.

"Before dismissing the subject, I would remark that the foramen ovale may be open to a very great extent, and yet there be no cyanosis, a few cases of which I will adduce. Case I is copied from my father's note book: it was that of a married lady, not particularly unhealthy, who after becoming pregnant suffered from cough and dyspnœa, which it was hoped depended on her pregnancy: shortly, however, before confinement, her breathing became more difficult, and general symptoms of anasarca with coagulable urine evinced themselves. For a few days after delivery she appeared to be going on well, but soon faltered in power, the anasarca increased, and she sank in about a fortnight, although her labour and its results were quite favourable as regards hæmorrhage, the separation of the placenta, &c.

"On examining the heart, which is in the museum at Guy's, the following appearances presented themselves, as described by Mr. T. W. King. The heart was generally enlarged, dilated, and hypertrophied; the right ventricle being most affected. Pulmonary artery disproportionately large. The foramen ovale formed a circular aperture full three inches in circumference, and altogether devoid of valvular membrane; or rather a few reticular cords at the posterior inferior part were all the remains of the valve. The circumference of the foramen thick and partly muscular. Much more considerable vestiges of a large Eustachian valve existed, consisting of filaments and membrane. The tricuspid opening wide, and its curtains extensive. The bicuspid valve strong; aorta rather small; and the ductus arteriosus was a cord. Upon inquiring of this lady's family whether or not she had manifested discoloration, all that could be learnt was, that when at school she used to be scolded occasionally from a supposition that she had been sucking ink, but whether this was the case could not be ascertained.

"Case II came under my notice in Guy's Hospital. This woman was never suspected during life to have any imperfection of either septum, nor was there marked livor. Yet on post-mortem examination, the right side of the heart was enormously enlarged, the fossa ovalis equal in size to a crown piece; the valve open, so as to admit the thumb, and the expanded membrane largely perforated and reticulated. Pulmonary artery very large; aorta rather small.

"Case III, related by M. Fouquier, is that of a man who arrived at the age of 43 without any cyania, yet on examination after death, the foramen ovale was found smooth and rounded, and open so as to admit the extremities of three fingers; the right auricle enormously dilated, though not to the same extent. (*Dictionnaire de Médecine*, Art. Cyanose.)

"Case IV is interesting, inasmuch as the ventricular septum was imperfect, yet the patient (a female) enjoyed good health until 18 years old, but died at the age of 20, from orthopnœa, with lividity and physical debility. The preparation is in Guy's Museum."

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3. *Experiments on the Absorption and Reproduction of the Heads of Bones.*—M. Flourens read to the French Academy of Sciences a note on the above subject. The fact which he attempts to explain is the increase of distance between the extremities of bones during the longitudinal growth of their shafts.

If we admit the ordinary theory of the growth of bones by *extension*, nothing is easier than the explanation of the fact in question. The two extremities of the bones become separated, because the body, the intermediate portion of the bone, is extended; but the extension theory is a groundless hypothesis. Bones do not grow because they are extended. They increase in thickness by *superimposed layers*, they increase in length by *juxtaposed layers*.

How is it, then, that during the elongation of bones by juxtaposed layers the heads of bones are absorbed and reformed, and always become more distant from each so long as the elongation of the bone goes on. That the fact is so is ascertained: M. Flourens has already proved the absorption, the reformation, the suc-

cessive reproduction of the heads of bones, by experiments with madder; he also ascertained the mode of growth of bones during their elongation by inserting small nails in the bone; the bone grew in length, but the interval between the nails remained unchanged: hence the increase in length occurred beyond the nails. M. Flourens adopted the same method in studying the *displacement*, the *separation*, or better, the *changes* that occur in the heads of bones during their successive absorptions and reproductions, and he now laid before the Academy preparations of the bones experimented on.

The tibia of a young rabbit was first exhibited, in which three nails had been inserted,—one below three millimetres from the inferior epiphysis; a second above four millimetres from the superior epiphysis; the third at the level of the spine of the tibia. The experiment lasted twenty-two days. The bone, which, when the experiment commenced, was six centimetres long, had increased three millimetres when the experiment terminated. The entire increase of length had taken place beyond the nails. The nail which had been placed on a level with the spine of the tibia was now three millimetres distant from it, and as this nail had not changed its relative position to the two other nails, it was the spine of the tibia which had changed its place and been elongated from it.

In a second experiment which lasted forty-six days, the nail which had been placed on a level with the spine of the tibia was at the termination of the experiment thirteen millimetres distant from it.

Finally, in a third experiment, continued for seventy days, the nail was seventeen millimetres from the spine of the tibia.

The spine—that is to say, the head of the tibia, becomes displaced more and more distant, the longer the experiment is continued; or, to speak more accurately, it is incessantly undergoing change. It is not one and the same head which is displaced, but several different heads which are formed in succession to be absorbed and then reproduced. There is then a complete mutation of bone during the entire period of its increase in length. The organ which produces the bone is the periosteum, and by it also it is absorbed.

The periosteum, which is nothing but the *external medullary membrane*, just as the medullary membrane is simply the *internal periosteum*, enjoys, like the latter, the power of absorbing and depositing bone.—*Dublin Med. Press*, Dec. 31, 1845.

4. *Development of Capillaries.*—Platner* has added confirmation to the account given by Prevost and Lebert,† of the mode in which capillary vessels are developed in new structures. These vessels never originate independently of the general circulation, but are invariably formed by offshoots from previously existing vessels, which offshoots arch and unite with each other so as to form common continuous tubes. This mode of development may be observed best in the tails of young tritons, in some of which may be seen numerous blind sac-like extremities of capillaries; in others long narrow processes may be noticed arising from these sac-like extremities, and insensibly disappearing from view; whilst in others again many of these processes may be found united to each other, forming a network of continuous arches. These arches, or capillary loops, are at first very narrow, and apparently impermeable to blood corpuscles, their interior being occupied and blocked up by a finely granular material: soon, however, they increase in diameter, and the double contour of a distinct wall becomes perceptible, especially at the points where the narrow tubes are connected with the main capillary trunks. The nuclei which are observed on the walls of fully-developed capillaries Platner conceives to be structures of later formation, and not to be the nuclei of cells which have preceded the development of the capillaries, and from the fusing together of the walls of which Schwann considered the capillary vessels to be formed. Platner also adds doubts whether the nucleus fibres of fibro-cellular tissue and of muscle described by Henle, consist of nuclei which have belonged

* Schmidt's Jahrbucher, No. 6, 1845. Platner's original paper is given in Muller's Archiv., Heft 5, 1844.

† Annal des Sciences Nat., Avril, 1844. Also notice of same in Paget's Report, British and Foreign Med. Review, April, 1845, p. 588.